REOPENING OF THE INSTITUTION OF CIVIL ENGINEERS.

On the 12th inst., the Institution of Civil Engineers commenced the new session; Mr. William Cubitt, president, in the chair.

The paper read was "A comparative View of the recorded Explosions in Coal Mines," by Mr. William West. The reports of Faraday, Lyell, De la Beche, Playfair, and others, were analyzed and tabulated, from which it appeared, that tendencies towards a dangerous condition existed in mines reputed to be comparatively safe, and that these tendencies were so numerous, and varied so suddenly in their nature and extent, as to necessitate attention to every kind of precaution.

The compatability of general good ventilation with the occasional occurrence of the most fatal explosions was particularly dwelt on. The witnesses on the inquests after the Haswell and the Jarrow accidents agreed that the "ventilation was perfect," "the pit full of air," and "the air quite good, and plenty of it." The fault, then, did not lie in the quantity of air, but rather in the difficulty of directing it so generally throughout all parts of the mine as to sweep away the gas as it was produced. The "spits" for the air were noticed, and the condition of the goaf, the pockets of gas formed in the roof, and the sudden irruptions from the occasional falls in the goaf and old stalls, were dwelt on at great length, and, combined with the injudicious use of unprotected lights, and the liability of accident to the lamps, were shown to have been the probable cause of all the explosions.

The precautions for saving life on the occurrence of accidents, such as abolishing bratticed shafts, and sinking a pair at each mine, at such distances apart as should insure one remaining intact, in case of an explosion injuring the other; the "scaling off" of a portion of the fresh air for the exhausting furnace, and conducting the return air into the upcast shaft at some height above the fire; together with several minor details for insuring the constant working of the exhausting apparatus to draw off the fatal "after-damp, or choke-damp," were strongly insisted on.*

ARCHITECTURE IN NOTTINGHAM.

On the Burton Leys, Nottingham, a new Baptist Chapel has been erected at a cost of 2,900*l*. It is called Anglo-Norman in style, and if an engraving of it given in the *Nottingham Review* be correct, which shows "longs and shorts" at the angles, an arcade of intersecting pointed arches, the gable terminating with an ornamental barge board, &c., it must be a strange jumble. The letter-press description, however, does not accord with the view, and we will give the architect the benefit of the discrepancy. The plan is a parallelogram, and comprehends a chapel 76 feet by 54 feet exteriorly; 73 feet by 51 feet in the clear between the walls; and 31 feet in height from the floor to the ceiling. There is a vestry at the western end, 30 feet by 25 feet, with three small committee-rooms adjoining, and over these a school-room. The structure is of brick, laid in old English bond with black joints, and stone dressings from the Horsley Castle Quarries, Derbyshire. A flight of nine stone steps forms the approach from Milton-street into a porch projecting from the main building about 10 feet, consisting of a vestibule, 17 feet by 9 feet, and two side-lobbies, 7 feet by 6 feet.

Immediately above the porch and running the whole width of it, an appearance of a diminutive brick colonnade is produced in the surface of the building, by the insertion of black bricks slightly recessed, so as to form a background. At about the same altitude, a pair of projecting brick string courses, two feet apart, encircle the building; and between them runs a zig-zag pattern of black bricks. In the intervening space from thence to the gable, is an interlacing arcade of semi-circular arches. On either side of these, and also of the porch, semi-circular arched windows are inserted. A stone cornice, with chevron moulding, terminates the gable, which displays a wheel window and four semi-columns supported on the string-course. The flanks present a plain and blank aspect. The whole is surmounted by a projecting brick cornice, with black bricks for a background, supporting a plain brick parapet, and being made to carry a stone string along the front. Accommodation is afforded for 700 persons on the ground floor by open benches of deal, stained and carved at the elbows: the floor has a gradual descent. The architect is Mr. Booker.

* Another pit explosion occurred on Monday near Newbattle, when twenty-six persons perished, most of them in the attempt to get through a stratum of choke-damp towards the shaft. The immediate origin of the fire and explosion is unknown.

DRY UNDER-GROUND ROOMS.

A reader of The Builder in your last number asks to be informed the best manner to "construct the walls" of an under-ground kitchen, so as to have them dry, and the kitchen fit for habitation; and, from what he further states, I am led to suppose the part to be made a kitchen is now a cellar, with the earth close up to the walls. Considering such to be the case, it will be necessary to go further than the information asked to insure no disappointment. In the first place, form on all sides, where accessible, an external drain or area from the surface to the bottom of the foundation, say 16 or 18 inches wide, paved at the bottom as a channel, in cement, with a fall to one or more ends, where a small drain may be laid to take away any water that may find its way into the area, to drain into the road if such can be made available; and at the same time, when the trenches are open, draining pipes or tiles, such as are used for draining land, may be laid by the side of the drain pipe: this will be of service in draining the land around. The top of the dry area should be arched over in cement, leaving openings to admit air: of course the area will be enlarged in front of window. In the second place, in the proposed kitchen build half-brick work in cement the whole height round the walls, leaving a space of two or three inches, and air-holes made through the external walls near the bottom and at the top, as many as may be sufficient to obtain a good current between the half-brick wall and the drain, inserting iron air-bricks. Plaster the brickwork in the room with Portland cement. The floor should be formed by taking out the earth as deep as practicable, and filling in a layer of concrete six inches thick, made of the best stone lime and clean gravel, to an even level, on which, when set, put a layer of pitch and tar half an inch thick; then lay the floor of York stone or slate on one course of brickwork, to support the stone or slate, in courses, leaving spaces in the brickwork for ventilation; the same in the brickwork of the walls. Build the walls of the room on the concrete and pitch, commencing at one-brick footing. The nature of the soil, and the inclination of the ground, require the adoption of such for the floor.

Should room be an object, it is not improbable the present walls could be taken out, rebuilt with good hard stock bricks in cement, with drains, &c., as before stated. W. C. Strange.

Another correspondent says, correctly as we think, that in constructing the new walls of underground kitchens, a layer of an inch thick of the "Metallic Lava," or of "Seyssel Asphalte," upon the foundations of the walls, will keep them always dry, as no damp can possibly arise. The ground must be kept off the walls by a dry-area; or the outside of the walls may be rendered with "Lava," or "Asphalte." A good layer of concrete, covered with "Lava," or "Asphalte," to form the flooring of the kitchens will have a good effect.

SIGHTS AND SCENERY.

The Princess's Theatre.—In the very successful new play, "The Templar," produced at *The Princess's Theatre*, Oxford-street, the scenery painted by Messrs. Dayes and Aglin, is scarcely so effective as that they painted for "Hamlet." We must except, however, the interior of the chapel in the fourth act, with its carved reredos and lectern. The piece, which is exceedingly effective, was written by Mr. Selous, brother of Mr. H. Selous, the artist,—best known, perhaps, by his outlines to the "Pilgrim's Progress."

Royal Lyceum Theatre.—A piece has been produced at this theatre under the title of "The Romance of the Rose," to introduce, amongst other things, some striking and novel groups, wherein the individuals composing them appear to be magically suspended. Our readers will remember the pretended "suspension by ether," practised by the professional wizards: the arrangement at the Lyceum, of which we are speaking, would seem to be an elaboration of the same device. In "The White Hood," a neatly written and clever historical drama (not played so well, by the way, as is usual at this house), there is an effective scene, the Interior of a Chemist's Shop, opening on to the market-place of Bruges.

Books.

The Great Exhibition of 1851; *or the Wealth of the World in its Workshops.* By Philoponos. London: E. Churton. 1850.

The writer of this pamphlet, who is evidently master of his subject, takes an encouraging view of the position of England in most manufacturing arts, and demonstrates the advantages which must result to the country from the approaching contest.

It is admirably written, and deserves very attentive consideration. Not the least so, the author's concluding "few words to the artisans and operatives," inculcating foresight and prudence, and warning them against the rock on which so many are miserably wrecked,—demoralising, debasing, destructive drink.

New Elements of Geometry. By Seba Smith. Bentley, New Burlington-street.

Quite recently, says this author,—

"I have observed, in some of the most valuable of the English scientific magazines, articles from able professors and distinguished mathematicians, gravely discussing the question of the relative value of three times nothing and twice nothing—0 × 3 and 0 × 2. * * * When learned professors find themselves driven to such conclusions by their received principles of a science, it would seem to be high time for them to go back to first principles, and see whether there be not something wrong in the very foundations of that science. But thus it must ever be while men attempt to reason about *nothing* instead of *something*."

Now, in order that we *may* have *something* to reason about in geometry, Mr. Seba Smith not only questions but denies the fact that lines have no breadth and surfaces no thickness. Geometry, he maintains, has for its object the measurement of *extension*, and lines without breadth and surfaces without thickness are imaginary things, of which this perfect and exact science can take no cognizance. "How vain, therefore, are all those speculations where these airy nothings are attempted to be forced upon geometry and mingled with its pure demonstrations!" But, to be brief, the grounds on which the present author bases all his new demonstrations are—

"That a mathematical line is made up of a succession of single and equal units; and therefore a mathematical line has always a *breadth* of one; also that a mathematical surface is made up of a succession of single lines, and therefore a mathematical surface has always a *thickness* of one."

The reader, doubtless, in pursuing the argument, *ad hominem*, will conclude that as a surface with a thickness of one is made up of a succession of single lines with each a breadth of one, and as a line with a breadth of one is made up of a succession of single and equal units, these units of extension are the geometrical points of which lines and surfaces are made up. But no: while "the unit we have been using is the representative of *a magnitude*, and a magnitude of a definite value and form" (namely, the square, or rather the perfect cube), on the contrary, "the nature of a point in geometry is rightly given in the books: it has position, but not magnitude." The new unit of extension, therefore, must be carefully distinguished, we presume, from the mere geometrical point, which is "simply an index of place or position of lines, surfaces, and solids."

Here, accordingly, is a dilemma for the reasoner who, arguing on the principle that a surface has no thickness, and a line no breadth, maintains, for instance, that of two solids in geometrical contact, the common surface between them is no part of either, and that if A be removed from B the common surface between them still remains as it was, the surface of B:—

"What becomes of poor A in this predicament? * * * To prevent the possibility of any imaginary advantage being possessed by B in this respect, let the two solids be separated, by removing both equally, the one to the right and the other to the left. Which of the two solids in that case shall retain the surface that was inherent in both, and common to both while in contact? Perhaps it may then be said that the surface is divided between them, each taking its part. If so, and it be still contended that their common surface, when in con-

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